ISOCOM COMPONENTS

PS2501-1, PS2501-2, PS2501-4

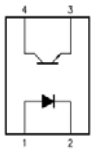
DESCRIPTION

The PS2501-1, PS2501-2 and PS2501-4 series of optically coupled isolator consist of an infrared light emitting diode and an NPN silicon photo transistor in a space efficient Dual In Line Plastic Package.

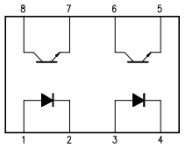
FEATURES

- AC Isolation Voltage 5300V_{RMS}
- CTR Selections Available
- Wide Operating Temperature Range -30°C to +100°C
- Lead Free and RoHS Compliant
- UL File E91231 Package Code “EE”
- VDE Approval Certificate No. 40028086

PS2501-1



PS2501-2



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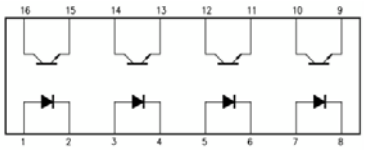

APPLICATIONS

- Computer Terminals
- Industrial System Controllers
- Measuring Instruments
- Signal Transmission between Systems of Different Potentials and Impedances

ORDER INFORMATION

- Add X after PN for VDE Approval
- Add G after PN for 10mm lead spacing
- Add SM after PN for Surface Mount
- Add SMT&R after PN for Surface Mount Tape & Reel (Available for PS2501-1SM and PS2501-2SM)

ABSOLUTE MAXIMUM RATINGS

Stresses exceeding the absolute maximum ratings can cause permanent damage to the device.
Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

Input

Forward Current	50mA
Reverse Voltage	6V
Power dissipation	70mW

Output

Collector to Emitter Voltage BV_{CEO}	80V
Emitter to Collector Voltage BV_{ECO}	6V
Collector Current	50mA
Power Dissipation	150mW

Total Package

Operating Temperature	-30 to +100 °C
Storage Temperature	-55 to +125 °C
Total Power Dissipation (derate linearly 2.67mW/°C at >25°C)	200mW
Lead Soldering Temperature (10s)	260°C

ISOCOM COMPONENTS 2004 LTD
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36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong
Tel : +852 2995 9217 Fax : +852 8161 6292
e-mail : sales@isocom.com.hk

ELECTRICAL CHARACTERISTICS (Ambient Temperature = 25°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = 20mA		1.2	1.4	V
Reverse Voltage	V_R	I_R = 10µA	6.0			V
Reverse Leakage	I_R	V_R = 4V			10	µA
Terminal Capacitance	C_t	V = 0V, f = 1KHz		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector—Emitter Breakdown Voltage	BV_{CEO}	I_C = 1mA, I_F = 0mA	80			V
Emitter—Collector Breakdown Voltage	BV_{ECO}	I_E = 100µA, I_F = 0mA	6			V
Collector-Emitter Dark Current	I_{CEO}	V_{CE} = 20V, I_F = 0mA			100	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current transfer ratio	CTR	I_F = 5mA, V_{CE} = 5V Optional CTR Grades GR L (PS2501-1 only)	80 100 200		600 300 400	%
Collector—Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 10mA, I_C = 2mA			0.3	V
Input to Output Isolation Voltage	V_{ISO}	AC 1 minute, RH = 40 to 60% Note 1	5300			V_{RMS}
Input to Output Isolation Resistance	R_{ISO}	V_{IO}= 500V Note 1	$5x10^{10}$			Ω
Output Rise Time	t_r	V_{CE} = 2V, Ic = 2mA, R_L = 100Ω		4	18	µs
Output Fall Time	t_f	V_{CE} = 2V, Ic = 2mA, R_L = 100Ω		3	18	µs

Note 1 : Measure with input leads shorted together and output leads shorted together.

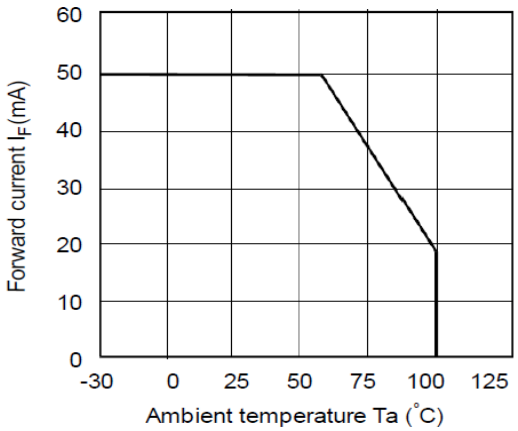


Fig 1 Forward Current vs T_A

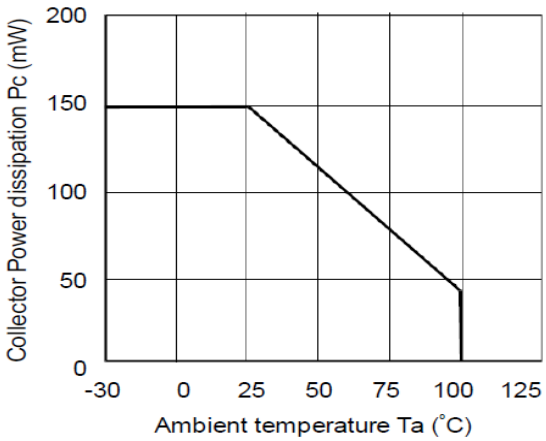


Fig 2 Collector Power Dissipation vs T_A

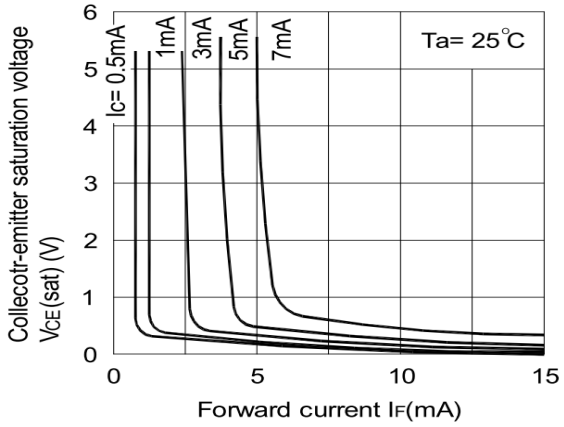


Fig 3 Collector-emitter Saturation Voltage vs Forward Current

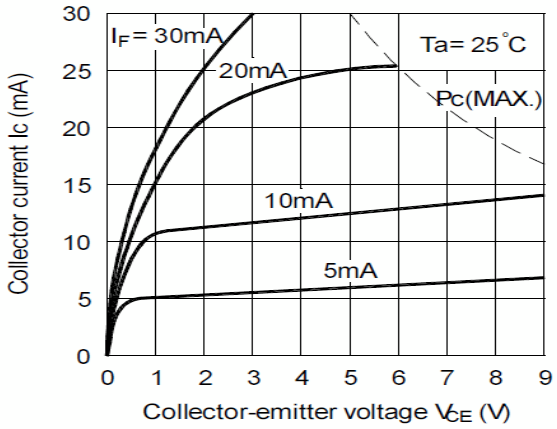


Fig 4 Collector Current vs Collector-emitter Voltage

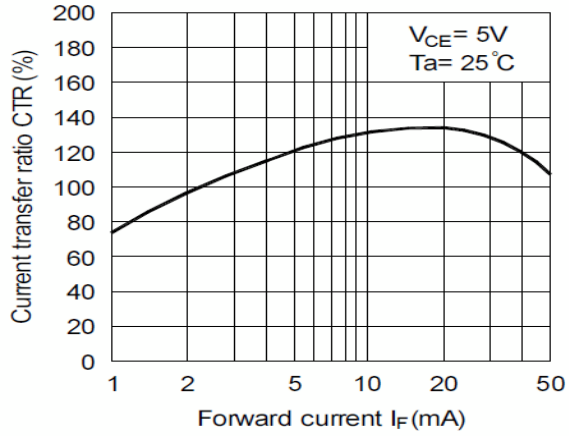


Fig 5 Current Transfer Ratio vs Forward Current

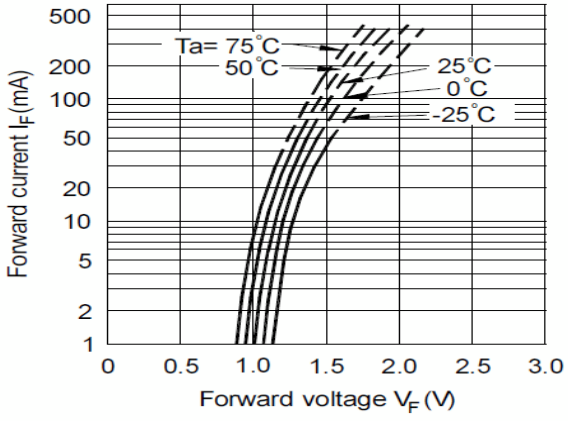


Fig 6 Forward Current vs Forward Voltage

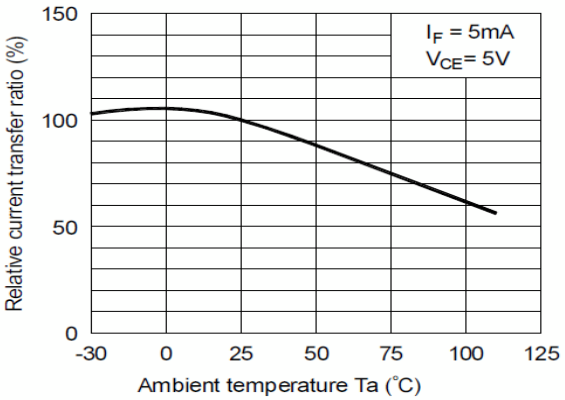


Fig 7 Relative CTR vs T_A

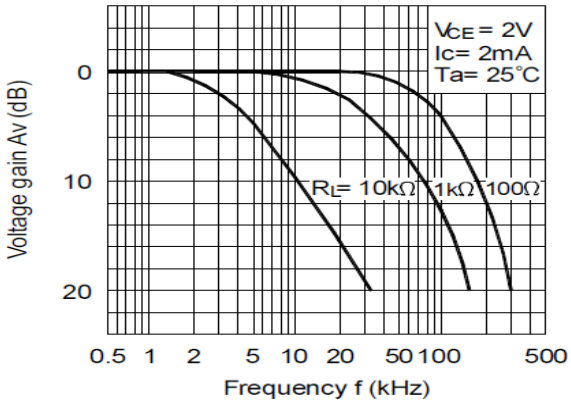


Fig 8 Frequency Response

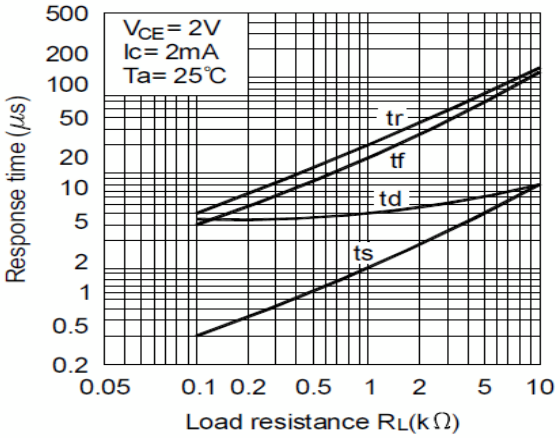
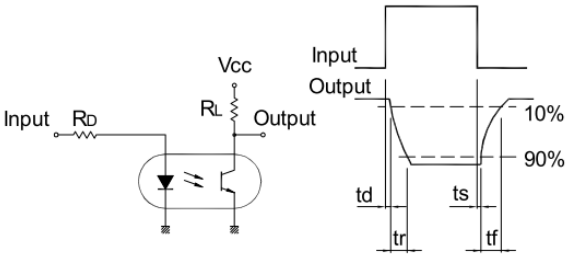


Fig 9 Response Time vs Load Resistance



Response Time Test Circuit

ORDER INFORMATION

PS2501-1 (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2501-1, PS2501-1GR, PS2501-1L	Standard DIP4	100 pcs per tube
G	PS2501-1G, PS2501-1GRG, PS2501-1LG	10mm Lead Spacing	100 pcs per tube
SM	PS2501-1SM, PS2501-1GRSM, PS2501-1LSM	Surface Mount	100 pcs per tube
SMT&R	PS2501-1SMT&R, PS2501-1GRSMT&R, PS2501-1LSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2501-2 (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2501-2, PS2501-2GR	Standard DIP8	50 pcs per tube
G	PS2501-2G, PS2501-2GRG	10mm Lead Spacing	50 pcs per tube
SM	PS2501-2SM, PS2501-2GRSM	Surface Mount	50 pcs per tube
SMT&R	PS2501-2SMT&R, PS2501-2GRSMT&R,	Surface Mount Tape & Reel	1000 pcs per reel

PS2501-4 (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2501-4, PS2501-4GR	Standard DIP16	25 pcs per tube
G	PS2501-4G, PS2501-4GRG	10mm Lead Spacing	25 pcs per tube
SM	PS2501-4SM, PS2501-4GRSM	Surface Mount	25 pcs per tube

CTR grade “L” available only for PS2501-1.

ORDER INFORMATION

PS2501-1X (UL and VDE Approvals)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2501-1X, PS2501-1XGR, PS2501-1XL	Standard DIP4	100 pcs per tube
G	PS2501-1XG, PS2501-1XGRG, PS2501-1XLG	10mm Lead Spacing	100 pcs per tube
SM	PS2501-1XSM, PS2501-1XGRSM, PS2501-1XLSM	Surface Mount	100 pcs per tube
SMT&R	PS2501-1XSMT&R, PS2501-1XGRSMT&R, PS2501-1XLSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PS2501-2X (UL and VDE Approvals)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2501-2X, PS2501-2XGR	Standard DIP8	50 pcs per tube
G	PS2501-2XG, PS2501-2XGRG	10mm Lead Spacing	50 pcs per tube
SM	PS2501-2XSM, PS2501-2XGRSM,	Surface Mount	50 pcs per tube
SMT&R	PS2501-2XSMT&R, PS2501-2XGRSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

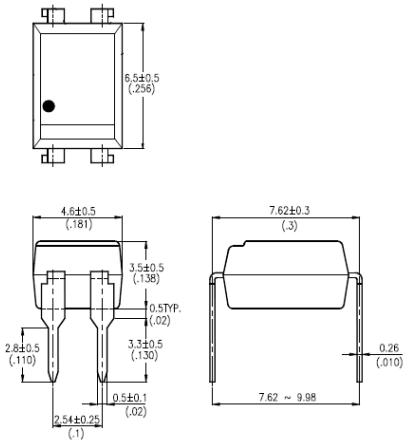
PS2501-4X (UL and VDE Approvals)			
After PN	**PN**	**Description**	**Packing quantity**
None	PS2501-4X, PS2501-4XGR,	Standard DIP16	25 pcs per tube
G	PS2501-4XG, PS2501-4XGRG	10mm Lead Spacing	25 pcs per tube
SM	PS2501-4XSM, PS2501-4XGRSM	Surface Mount	25 pcs per tube

CTR grade “L” available only for PS2501-1.

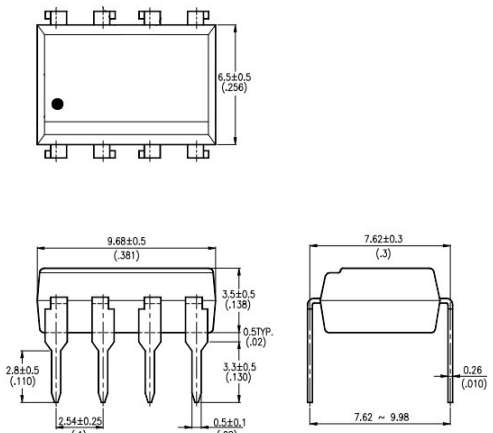
PACKAGE DIMENSIONS in mm (inch)

DIP

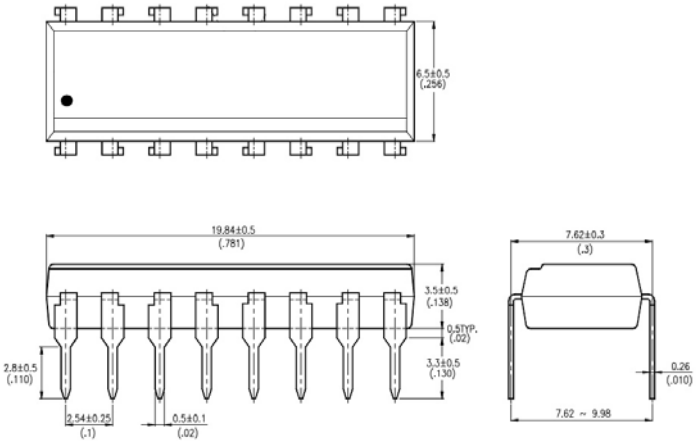
PS2501-1



PS2501-2



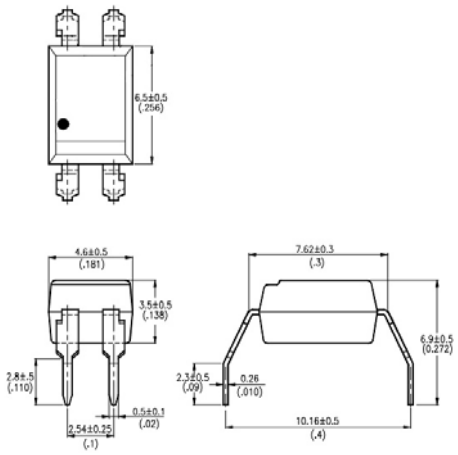
PS2501-4



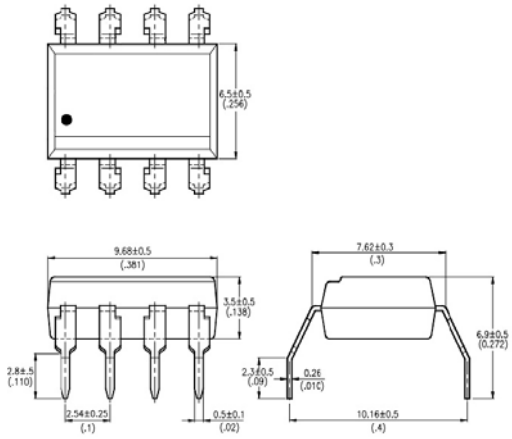
PACKAGE DIMENSIONS in mm (inch)

G Form

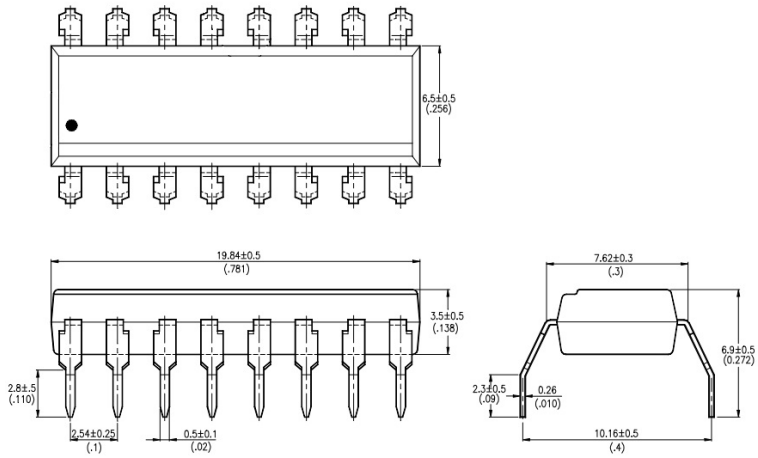
PS2501-1G



PS2501-2G



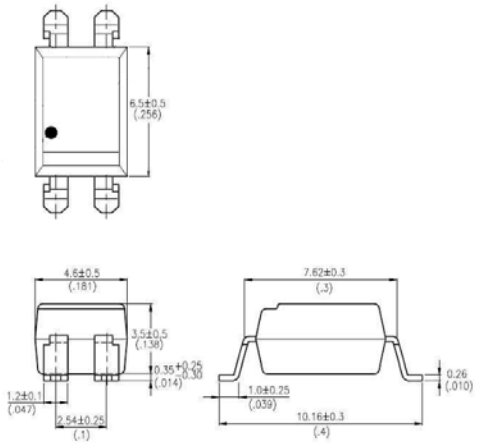
PS2501-4G



PACKAGE DIMENSIONS in mm (inch)

SMD

PS2501-1SM



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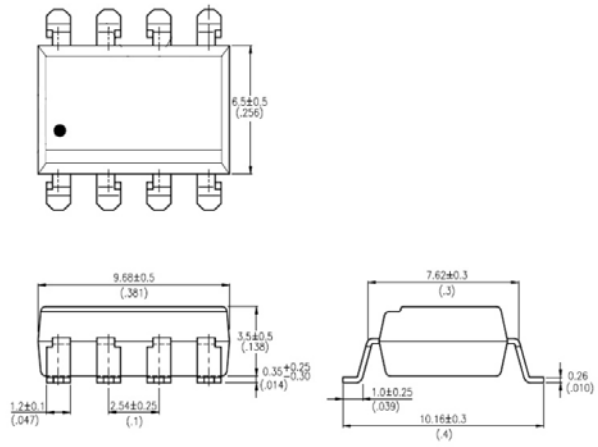
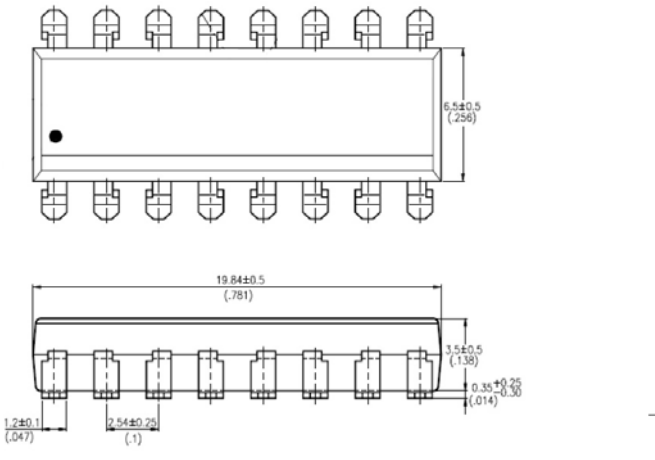
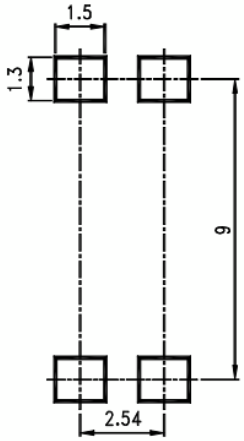


PS2501-4SM

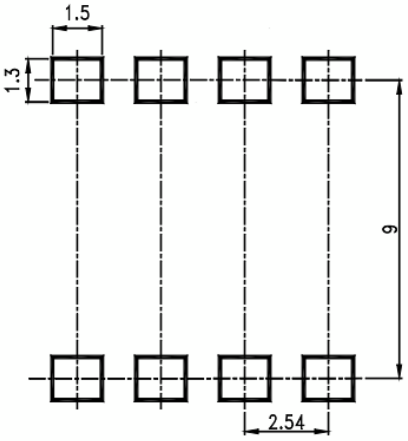


RECOMMENDED PAD LAYOUT FOR SMD (mm)

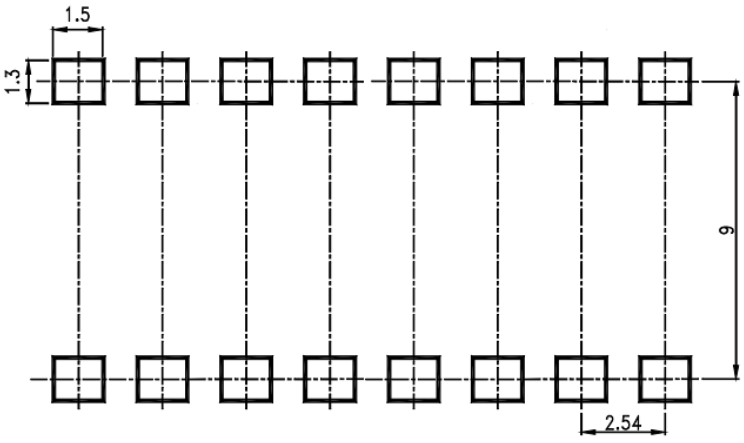
PS2501-1SM



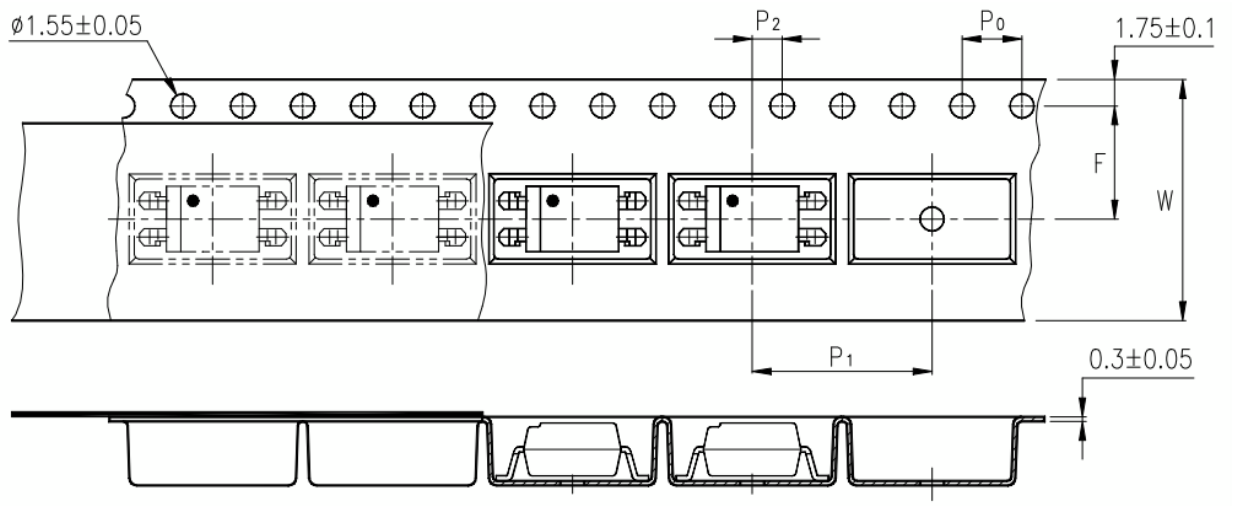
PS2501-2SM



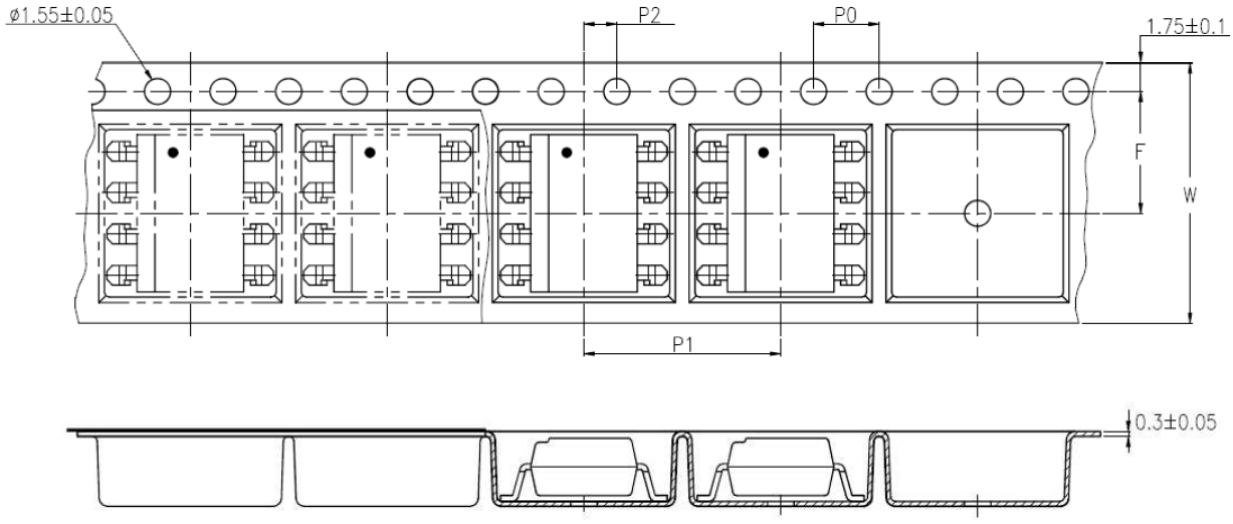
PS2501-4SM



TAPE AND REEL PACKAGING



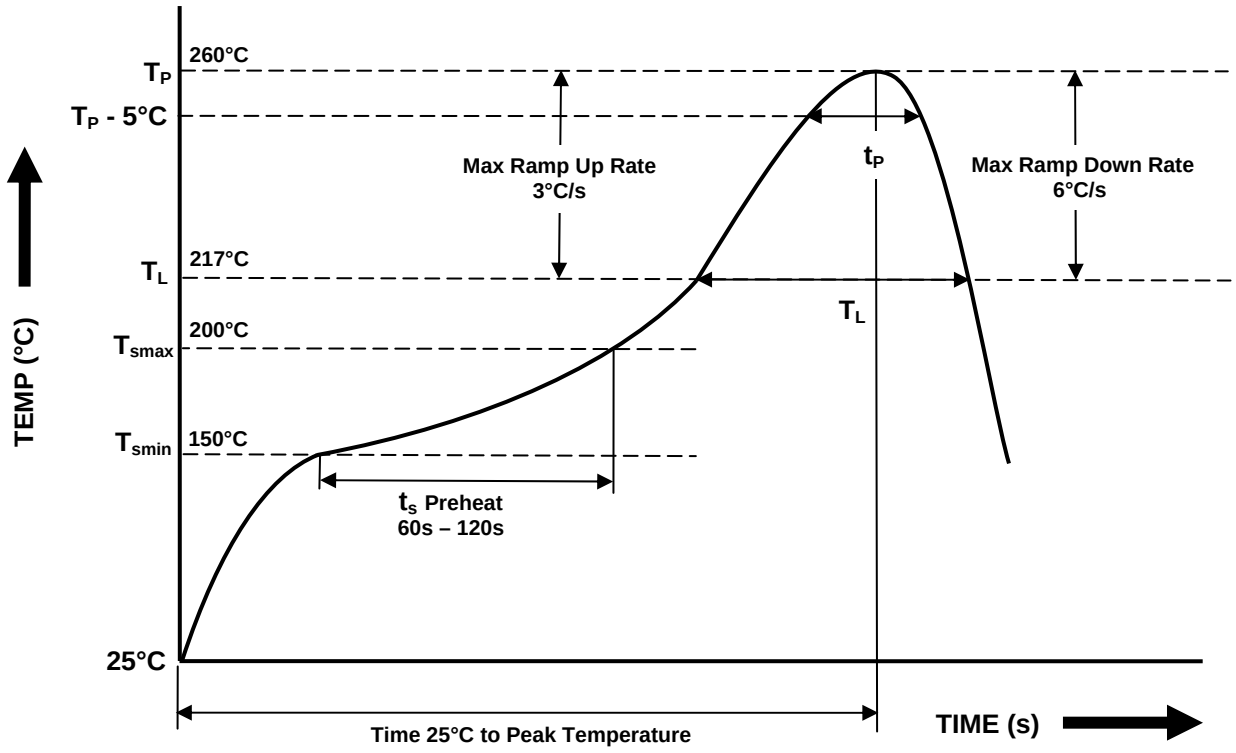
PS2501-1SMT&R



PS2501-2SMT&R

Description	Symbol	Dimensions in mm (inches)
Tape wide	W	16 ± 0.3 (.63)
Pitch of sprocket holes	P_0	4 ± 0.1 (.15)
Distance of compartment	F P_2	7.5 ± 0.1 (.295) 2 ± 0.1 (.079)
Distance of compartment to compartment	P_1	12 ± 0.1 (.472)

IR REFLOW SOLDERING TEMPERATURE PROFILE FOR SMD
(One Time Reflow Soldering is Recommended)



Profile Details	Conditions
Preheat - Min Temperature (T_{SMIN}) - Max Temperature (T_{SMAX}) - Time T_{SMIN} to T_{SMAX} (t_s)	 150°C 200°C 60s - 120s
Soldering Zone - Peak Temperature (T_P) - Time at Peak Temperature - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature (T_P – 5°C) - Time maintained above T_L (t_L) - Ramp Up Rate (T_L to T_P) - Ramp Down Rate (T_P to T_L)	 260°C 10s max 217°C 30s max 60s - 100s 3°C/s max 6°C/s max
Average Ramp Up Rate (T_{smax} to T_P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max

NOTES :

- Isocom is continually improving the quality, reliability, function or design and Isocom reserves the right to make changes without further notices.

- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.

- For equipment/application where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc., please contact our sales representatives.

- When requiring a device for any ”specific” application, please contact our sales for advice.

- The contents described herein are subject to change without prior notice.

- Do not immerse device body in solder paste.

ISOCOM
COMPONENTS

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In developing your designs, please ensure that ISOCOM products are used within specified operating ranges as set forth in the most recent ISOCOM products specifications.

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